

LEPIDOPTERA FROM THE MOUNTAINS OF NORTH
WALES

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An examination of records from North Wales suggests that very little work has been done on the butterflies and moths occurring on the higher parts of Snowdonia and other northern mountains. Species observed between 1964/1967 are listed below, together with short notes on foodplants and localities. It follows that species, larval foodplants, localities and possible maximum heights of occurrence cannot be complete over so short a period and there is scope for additional information on all points. So that species associated with deciduous trees should not be included, an arbitrary minimum altitude of 1500 feet was fixed to give a true picture of the high ground fauna. While it is known that plantations of conifers exist up to 1700 feet, these were avoided as creating artificial shelter which could support species not found under normal mountain conditions. The occurrence of a species depends, among other factors, on the presence of one of its accepted foodplants and its numbers may be variable at high altitudes it may be plentiful in a sheltered hollow or fold of the ground and scarce on more exposed land at the same height. The number of true upland species found in the various localities is small, for many of those listed which feed on heather, bilberry, cotton grass, bedstraw, rushes, sedges etc., also occur on heaths and mosses even down to sea level.

As far as possible both scientific and popular names are shown but this is not always possible with the so-called microlepidoptera, i.e., Pyraloidea onwards. The smaller moths are still neglected by many lepidopterists though it is these which give most scope for the study of unknown life histories and distribution. This last is borne out by the recent discovery of a small moth new to the British Isles on the Great Orme and the occurrence in North Wales of a few species previously recorded only from the south or south-east of England.

The main part of this survey was made on the Carneddau and its spurs, the Glyder range, Rhinog, the Denbighshire moors and the moorlands south of Bettws-y-Coed and Penmachno. Moel Siabod has not been worked yet and the occasional visits west of Capel Curig were mainly unproductive because of bad weather.

PAPILIONOIDEA

Five species of butterflies are known to breed at over 1500 feet and three species of migrant were seen. *Callophrys rubi* L., (Green Hairstreak) flies over its foodplant *Vaccinium myrtillus* L. (bilberry) in May and early June on Cefn Cyfarwydd, Moel Eilio above Dol-garrog and on Rhinog Fawr. It appears to be widespread but not plentiful. *Coenonympha pamphilus* L. (Small Heath) is sparsely distributed over grasslands up to 2,000 feet, at which height a colony is established on Tal-y-fan. It feeds on species of grass and is plentiful at lower levels in North Wales. *Coenonympha tullia* Mull. (Large Heath) is usually found in the wet parts of peat bogs where *Rhynchospora alba* L. (whitebeak sedge) grows. Most colonies in North Wales lie between 600-900 feet but it is found in July near Llyn Conwy at 1500 feet and on Berwyn at 2000 feet. There is a well-known colony on the border of Flintshire at 300 feet. *Aglais urticae* L. (Small Tortoiseshell) which is a common lowland insect, feeds occasionally on nettle growing in the shelter of upland buildings and the imago probably passes the winter in such buildings, for hibernated specimens can be seen flying there in April and May. Upland distribution depends on the presence of nettle. Imagines and larvae were seen on Tal-y-fan, Snowdon, at Llyn Stwlan, at Llyn Anafon, on Berwyn and the Migneint and Denbighshire moors.

Though I have not yet found *Nymphalis io* L. (Peacock), it could breed and hibernate in similar situations. *Pieris napi* L. (Green-veined White) feeds on Cruciferae and is a common lowland insect usually associated with wet ground. Though uncommon at 1500 feet or over, ten were seen on 15th June 1967 at over 3000 feet on the ridge between Foel Fras and Carnedd Llewelyn and it is thought the larvae feed on Crucifers growing on base rich cliffs such as Craig-y-Dulyn and others on the east side of the Carnedd range. *Vanessa atalanta* L. (Red Admiral) and *Vanessa cardui* L. (Painted Lady) migrate from North African breeding grounds to this country in the Spring reaching this area in May and June. Larvae resulting from eggs laid by these migrants feed on nettle and thistle and the butterflies emerge in July, August and September. In September and October, these native-bred butterflies begin to move individually south and south-west to return to the original breeding grounds in Africa. It is clear that butterflies which can cross sea and large land masses, will move without difficulty over the highest Welsh mountains and may be seen at any altitude. On 12th May 1966, two *atalanta* were observed flying north-west on Rhinog Fawr and single specimens were noted moving south in September over Mynydd Hiraethog and Berwyn. The third migrant, *Pieris brassicae* L. (Large Cabbage White), a well-known pest of garden Crucifers, is an example of a native species which is strongly reinforced by migration. The migration originates in southern Scandinavia when the butterflies cross the Baltic into Germany. Part of the swarm turns west or south-west passing through Belgium or Holland to cross the North Sea into the British Isles. These arrive here usually in July and August and there is some evidence of migrants arriving also in May and June. It is possible that our British bred butterflies, which hibernate as pupae, may migrate within the British Isles. On 13th June 1967, six butterflies were flying westward at 3100 feet between the summits of Carnedd Llewelyn and Foel Grach so it appears that height is no deterrent. In September 1967, a few were moving south-east over Berwyn at 1600 feet.

BOMBYCOIDEA

Larvae of *Lasiocampa quercus* L. (Oak Eggar) and *Macrothylacia rubi* L. (Fox moth) are found on heather, bilberry and other plants up to 2000 feet in many places.

NOCTUOIDEA

ARCTIIDAE. *Parasemia plantaginis* L. (Wood Tiger) flies in the sunshine in July over the moors near Llyn Conwy, Migneint and near the Sportsman's Arms on A543. The larva feeds on various plants including heather.

NOCTUIDAE. These are mainly stout-bodied moths which rest with wings folded to their body and, with few exceptions, fly at night. The feeding habits of the larvae vary and the majority feed at night, hiding during the day under stones, in the herbage or between spun leaves. *Lycophotia varia* de Vill. (True Lover's Knot) was plentiful at light at 1750 feet on Y Garn in July 1967. It occasionally flies over its foodplant, heather, by day and has been observed at Llyn Conwy and on the Carneddau. *Ammogrotis lucernea* L. (Northern Rustic) came to a mercury vapour lamp on Y Garn in July 1967.

The larva is found on various plants including saxifrage, stonecrop and harebell. *Diarsia mendica* Fab. (Ingrailed Clay) also came to light on Y Garn in July. The larva feeds on various plants. *Amathes ashworthii* Doubl. (Ashworth's Rustic) occurs only in the uplands of north and central Wales and is not found elsewhere in the British Isles. The larva was found on the Carneddau up to 1900 feet and the moth was plentiful in July on the Glyders at 1750 feet. It has been found as far east as Llangollen and as far south as Cader Idris and Aberystwyth. Among others, the listed foodplants

are bedstraw, thyme, sorrel and plantain. *Noctua pronuba* L. (Large Yellow Underwing), which feeds on grasses and low plants, is found at around 1500 feet in many places. *Anarta myrtilli* L. (Beautiful Yellow Underwing) flies in sunshine over its food, heather and ling on moors up to 1700 feet. *Hadena bombycina* Hufn. (Glaucous Shears) was found on rocks of Twll Du and near Penmachno in May the wide range of food includes heather, bilberry, bog myrtle and sallow. *Cerapteryx graminis* L. (Antler Moth) is common in many places up to 2000 feet the grass feeding larvae may occur in large numbers and cause considerable damage to pasture. *Lithomia solidaginis* Hiibn., (Golden Rod Brindle) is not associated with golden-rod and is found on moors and in upland woods where the larva feeds on a variety of foods including heather, bilberry and bog myrtle. The moth rests on walls, rocks, posts and trees in August and September and has the habit of thrusting its head into crevices, leaving the body and closely folded wings thrust outward, thus giving the appearance of a grouse dropping. Probably widespread, it occurs on the Penmachno moors, near Llyn Conwy and on the Denbigh moors. *Cryphia perla* Schiff. (Marbled Beauty) which feeds on lichen on walls, is a common insect in North Wales up to 400 feet. It was a surprise to find one at mercury vapour light at 1750 feet on Y Garn though this may have been carried by wind or by a vehicle on the nearby A.5. A few specimens of the common *Apamea monoglypha* Hufn. (Dark Arches) and *A. crenata* Hufn. (Cloud-bordered Brindle) have been found resting on rocks and posts over a wide area. A larva of *Euplexia lucipara* L. (Small Angle-shades) was found on a fern near Twll Du in September, 1966. The larva of *Celaena haworthii* Curt. (Haworth's Minor) feeds low down in the stems of *Eriophorum vaginatum* L. (Cotton Grass) and the moth comes to flowers of rush and heather on sunny afternoons in September. It has been seen on Denbigh moors, Tal-y-fan and Migneint moors. *Arenostola pygmina* Haw. (Small Wainscot) is mainly a lowland species but occurs occasionally on the Denbigh moors. It feeds on *Carex* species. Migration accounts for the presence of *Plusia gamma* L. (Silver Y) from May to October. *Plusia interrogationis* L. (Scarce Silver Y) was seen occasionally on Cefn Cyfarwydd in July, 1966. The larva feeds on bilberry and heather.

GEOMETROIDEA

The majority of larvae feed openly on the leaves of trees and plants except for a few species which rest or feed between spun leaves or shoots. The majority of larvae have only two pairs of prolegs which are situated on the rear segments. Moving by these and the three pairs of thoracic legs, the body is arched or looped when walking and they are often known as loopers. Some larvae mimic a small twig and are hardly discernible from neighbouring twigs on which they rest, holding their stretched out bodies at an angle of 45 degrees. The moths rest on walls, rocks, trees and in the herbage and fly mainly at dusk or after dark. At rest, the majority of species fold their wings to form a triangle and some fold their wings above the back while feeding, resembling a resting butterfly. *Sterrhia eburnata* subsp. *britanniae* Mull. (Weaver's Wave) is found only in the mountains of North Wales in the British Isles and ranges from Penmaenmawr in the north southwards to Dolgellau. The moth rests on rocks or in herbage during the day and flies at dusk. Two larvae were found on chickweed at 1800 feet on 12th May, 1967, near Twll Du on the Glyders. *Xanthorhoe munitata* Hiibn. (Red Carpet) which feed on various low plants, has been found from 1200-2000 feet on Drum and Tal-y-fan and at about 1700 feet in the Glyders. This is a species found only on high ground. *Xanthorhoe spadicearia* Schiff. (Red Twin-spot Carpet),

normally a lowland species which feeds on a variety of plants, was seen at 1700 feet near Penmachno and Twll Du. *Colostygia pectinataria* Knoch (Green Carpet) is a common lowland species feeding on bedstraw and is fairly common up to 2000 feet on Tal-y-fan. *Colostygia didymata* L. (Twin-spot Carpet) feeds on various low plants and is found from sea level up to 2500 feet. In July and August, it is common on the mountains, resting during the day on walls, posts and among herbage. *Entephria caesiata* Schiff. (Grey Mountain Carpet) is an upland species found from about 800-2400 feet, which feeds on bilberry, ling and heather and is common on the Welsh mountains. *Entephria flavicinctata* Hiibn. (Yellow-ringed Carpet) is a high ground species feeding on saxifrage and stonecrop. One was found above the Twll Du many years ago and a second was seen on nearby Y Garn at 1750 feet in July, 1967. I believe these are the only records for North Wales. *Colostygia salicata* subsp. *latentaria* Curt. (Striped Twin-spot Carpet), which feeds on bedstraw, was seen at 1750 feet on Y Garn (Glyders) and at 1900 feet on Tal-y-fan in July. *Lyncometra ocellata* L. (Purple Bar) was seen on Tal-y-fan in July among bedstraw. *Lygris populata* L. (Northern Spinach) feeds on bilberry and is fairly common between 800-2000 feet. The typical form has yellow forewings but a few from Drum vary from brown to brownish purple and so resemble a form from the Scottish mountains. *Dystroma truncata* Hufn. (Common Marbled Carpet) was bred from larvae on bilberry from Drum and Tal-y-fan. *Hydriomena furcata* Thunb. (July Highflyer) is associated on lower ground with sallow and hazel but also feeds in spun leaves of bilberry up to 2000 feet. *Epirrhoe galiata* Schiff. (Galium Carpet), which is also a coastal species, was found at 1750 feet on Y Garn and Tal-y-fan in July, 1967. The food plant is bedstraw. *Eupithecia nanata* subsp. *angusta* Prout (Narrow-winged Pug) is common among heather. This is the only Pug recorded though *Gymnoscelis pumilata* Hiibn. (Double-striped Pug) has been bred from heather at 1300 feet near Llyn Crafnant. *Oporinia filigrammaria* H.-S. (Small Autumnal Carpet) is occasionally found resting on posts on road A. 543 near Pont-y-Clogwyn in late August and September and has been found near the summit of Tal-y-fan. The larva feeds on heather and bilberry. Single larvae of *Crocallis elinguaris* L. (Scalloped Oak) and *Alcis repandata* L. (Mottled Beauty) found on bilberry at about 1600 feet on Tal-y-fan, are probably at the upper altitude range of both species in North Wales. *Ematurga atomaria* L. (Common Heath) is plentiful on Cefn Cyfarwydd near Trefriw, Moel Hiraethog and Migneint where it feeds on heather and ling.

PYRALOIDEA

Apart from the Crambinae, this family is weakly represented on the mountains of North Wales. The commonest species is *Scoparia ambigualis* Treits., which may be found resting on rocks up to 2300 feet and probably higher. The migrants, *Nomophila noctuella* Schiff., and *Udea ferrugalis* Hiibn., may occur anywhere and have been seen on Berwyn and Denbigh moors. *Nephopteryx palumbella* Fab. was common among *Erica* at 1800 feet on Tal-y-fan and at 1600 feet on Berwyn. Species of Crambinae rest with their wings folded round grass stems and fly at dusk and after dark though they are easily disturbed during daylight. The larvae feed at the base of grass stems and usually spin a silken tube at ground level among the stems. *Crambus pratellus* L. is widely distributed up to 1700 feet. *Catoptria margaritellus* Hiibn. is common on the wetter parts of the Migneint moors up to 1600 feet, the moths being smaller and darker than those found on the mosses of the Shropshire-Flintshire border. The feeding habit of the larva is unknown. *Agriphila culmellus* L., is by far the commonest Pyralid and is found up to 2300 feet from

July to September. Two of the larger Crambidae, *Agriphila inquinatellus* Schiff. and *A. tristellus* Schiff., were found in small numbers up to 1800 feet on the Carneddau which is probably the maximum height at which they breed under normal conditions.

Catoptria furcatellus Zett., one of the two British mountain species was found on Snowdon in 1886 by J. W. Ellis and by the late H. W. Daltry in the 1930s in June and July. It could occur in suitable places in the higher parts of the Welsh mountains. The second mountain species *C. ericellus* Hiibn., which occurs at 1500 feet or over, has not been recorded in Wales.

TORTRICOIDEA

The moths rest with their wings folded to or around the thorax and abdomen and many species appear bell-shaped in their resting positions. The larvae usually spin some type of silken habitat in which to feed, e.g. in folded leaves or spun shoots, among flowers or seeds, in plant stems or roots and, in the early instars, a few species mine leaves. This protective shelter of silk may be well developed among leaves and shoots and even slight in the case of flowers, seeds, stems or roots. Very few can be classed as true mountain species for many listed below are also insects of low-lying mossland and heaths.

Eupoecilia angustana Hiibn. is a common species on moors and has a number of foodplants including heather and *Potentilla*. The larvae of *Archips hebenstreitella* Mull. and *Syndemis musculana* Hübn. feed in spun shoots of bilberry on the Carneddau, Denbigh, Migneint and Berwyn moors. The former hibernates to recommence feeding in the spring while the latter pupates in a folded leaf in October. *Philedone gerningana* Schiff., which feeds at lower altitudes on rockrose on limestone, was bred from spun shoots of bilberry from Tal-y-fan and the Migneint moors. In the spring, the upper shoots of bilberry may appear brown and withered and this is caused by the larvae of *Amelia viburnana* Schiff., feeding in the spun shoots. This larva also feeds on heather and is common up to 2100 feet. *Clepsis senecionana* Hiibn. is found among bilberry up to 1800 feet in the Carneddau and at lower levels also among *Myrica* (sweetgale) especially above Crafnant and Llyn Gwynant. *Philedonides prodromana* Hiibn. a mountain species rarely found below 600 feet, occurs in April up to 1600 feet on the Denbigh and Migneint moors. The larva feeds on *Potentilla* and probably on heather and other plants. In July, August and early September, *Eana osseana* Scop. is common up to 2000 feet and is often found on close cropped pasture. The larva feeds in spun leaves of many low plants. *Acleris caledoniana* Steph. is common among bilberry during August up to 2000 feet *Potentilla* is an alternative food. *Acleris hyemana* Haw. emerges in October but is more frequently seen after hibernation, flying over heather on the Denbigh and Berwyn moors on sunny afternoons in April. The males of *Exapate congelatella* Cl. rest on rocks, walls and among herbage during the day and fly over heather at dusk the short winged females which are unable to fly, rest on the top of heather shoots in the evening. It has many foodplants and a wide distribution from sea level to 1700 feet. *Griselda myrtillana* Westw., flies over bilberry in the afternoon and evening sunshine in June and has been found on Drum up to 2250 feet and on Tre'r Ceiri at 1590 feet. Spun tips of bilberry found in May and June contain larvae of the common *Rhopobota naevana* Hiibn. and the moths rest on walls, rocks and fences from July to September. Though it occurs at lower levels in Scotland, *Rhopobota ustomaculana* Curt. is considered a mountain species in North Wales for its food *Vaccinium vitis-idaea* (Cowberry) seems to occur only above 1500 feet. Larvae were abundant in spun shoots on Rhinog Fawr in 1965. Larvae of *Olethreutes mygin-*

dana Schiff. also occur on Rhinog Fawr on the same plant, spinning a tent like structure of white silk among the upper leaves. *Ancyliis myrtillana* Treits., is fairly common on the Carneddau and one found at the summit of Foel Grach (3195 feet) is the highest record of a Tortricid found by me in Wales. The larva feeds in a pod spun from a leaf of bilberry. Any established growth of *Juncus* (Rush) up to 1800 feet supports *Bactra lanceolana* Hiibn., whose larvae feed in the lower parts of the stems. It is particularly common on Tal-y-fan and Drum from June to August. The pretty black and white *Apotomis sauciana* Frol. occurs widely among bilberry in July and August up to 1600 feet. *Orthotaenia undulana* Schiff. is fairly common on the Denbigh and Migneint moors but is less frequent on the slopes of the Carneddau and Glyder. The larva lives between spun leaves of bilberry and as it occurs where bilberry is absent, there are other mountain foodplants. *Olethreutes schulziana* F. is fairly common on the Penmachno and Migneint moors but has not yet appeared on the Carneddau or on the lower moors above the Conway valley. It usually flies over heather from June to August and both foodplant and life history are unknown. The common and polyphagous *Olethreutes lacunana* Schiff. is found up to 1500 feet and occurs higher only in sheltered situations.

TINEOIDEA

A few *Ochsenheimeria bisontella* Zell. were found near Twll Du at rest on grass stems the feeding habit is imperfectly known but it is thought that it feeds in grass stems or rolled leaves like other species of the genus. Larvae of *Lithocolletis junoniella* Zell., mining the underside of leaves of *Vaccinium vitis-idaea* (Cowberry) above 2000 feet on Rhinog Fawr in May, produced moths in June.

When the larva hatches from the egg, it enters the under-surface of the leaf and feeds on the tissue. It remains within the cavity or mine so constructed throughout the larval stage without fracturing either the upper or lower epidermis of the leaf pupation takes place within the mine and the pupa thrusts through the lower epidermis shortly before the moth emerges. The mine-infested leaves are usually found on plants growing in the shelter of heather.

YPONOMEUTOIDEA

Anthophila fabriciana L., whose larvae feed in a web on nettle, is found in situations similar to the Small Tortoiseshell butterfly near upland buildings and is common where it occurs. *Glyphipteryx thrasonella* Scop., a plentiful lowland species among *Juncus*, occurs at 1800 feet in sheltered parts of Tal-y-fan and *G. haworthana* Steph. was found on the Denbigh moors flying over cotton grass, its food-plant, in May. A well-known migrant from Europe, *Plutella maculipennis* Curt. (Diamond-back moth) occurs frequently and the larva feeds on Cruciferae in Britain during summer.

GELECHOIDEA

Coleophoridae. These are small moths with narrow forewings and lanceolate hindwings which rest with their antennae pointed forward in line with their bodies. The larvae live in cases made of silk, leaf fragments, seeds or other vegetable matter and feed on the parenchyma (tissue) of leaves or on seeds. Although these are miners, the larva uses only the front pairs of legs for moving the case from one feeding location to another while the remainder of the body remains in the case. Leaf-feeding larvae make a blotch mine bearing a central puncture usually on the underside of the leaf and feed on any tissue within reach before moving to a fresh feeding place. Those feeding on seeds usually make a small hole in the side of the seed. Though about eighty species of *Coleophora* occur in Britain only *C. alticolella* Zell., which feeds on seeds of *Juncus*, has been recorded above 1500 feet. A species with a pistol-shaped case may occur on *Vaccinium vitis-idaea*.

Elachistidae. The larvae of these small moths feed in mines in the leaves of grasses and sedges and may occasionally leave the initial mines to form fresh ones in other leaves. When full-grown, they leave the mines to pupate on the blades or stems though some species spin a frail silken cocoon. *Elachista albifrontella* Staint. was found up to 1800 feet on the Carneddau and is associated with several species of grasses. *E. rhynchospora* Staint. and *E. kilmunella* Staint. are fairly widespread on moors where *Eriophorum* (Cotton Grass) grows the last species may also feed on a species of sedge. Mined leaves of a fescue grass from Tal-y-fan produced a few specimens of *E. argentella* Cl. An unidentified moth was found at 3000 feet between Foel Fras and Foel Grach (Carneddau) in June, 1967.

Gelechiidae. Though it does not hold in a few genera, a useful characteristic for recognition is that many species have a trapezoidal hindwing with a produced apex. The feeding habits of the larvae are varied but most spin some type of silken resting place. *Bryotropha terrella* Schiff. is widespread up to 1600 feet and the larva feeds in a silken tube among the base of grasses. *Neofaculta betulea* Haw. is fairly common among its foodplant, heather, on the Denbigh and Migneint moors. *Teliopsis diffinis* Haw. occurs up to 1600 feet on Tal-y-fan and on the Migneint moors in places where *Rumex acetosella* L. is established. The usually common *Mirificarma mulinella* Zell., which feeds in the flowers of gorse, is scarce at 1600 feet on Tal-y-fan and this may be the extent of its altitude range.

The heavy grazing in the mountains of Snowdonia restricts the growth of many foodplants, e.g. both heather and bilberry are either short-cropped or entirely eaten out over large areas and may exist only in places inaccessible to grazing animals. Numbers and species of lepidoptera are less plentiful on heavily grazed slopes and are more plentiful on the peat moors of Denbigh and Migneint where there is less grazing and indigenous plants grow strongly. The effect of altitude has been mentioned previously and it appears that numbers of lepidoptera decrease considerably above 2000 feet, especially on the more exposed ground. Conversely, sheltered parts of high ground with base rich soil such as the higher slopes of Cwm Idwal, which support a rich plant life, will produce greater numbers of insects.

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